

beneath (behind the fourth and fifth teeth of the upper jaw) and tightened by means of a screw.

The advantages of the device proposed when compared to other similar devices, may be summed up in the following way, to wit:

1. All data may be read extraorally (but with the device introduced still in the mouth);

2. the device may be fixed in a generally standard way in the mouth;

3. all three dimensions are measured simultaneously: they may be first fixed and only then the device may be removed from the mouth (whereby the accuracy of the measurement is ensured);

4. the device is designed in such a way that the parameters measured give us the characteristic of the entire palate (or its architectural structure: the palate index-characteristic of the vault the depth — characteristic of the development of the alveolar arch);

5. the device may be applied both in case of grown up population as well as in case of children (temporary and permanent teeth);

6. the device may be also used in the event of defective teeth;

7. measurements may be carried out with the aid of said device on live material, orthodontic models as well as on anthropologic skeleton material;

8. the properties of the device enable the operator of same to obtain a complex characteristic of hard palate, meeting all contemporary requirements. It may be used by plastic surgeons, by otorhinolaryngologists, stomatologist, peditres, genetic workers, anthropologist as well as for constitutional and biological examinations.

SUMMARY

The authors describe a device, developed by them, which is protected by letters patent in the Czechoslovak Socialist Republic. The device, to which the name of "palatometer" was given, is destined for carrying out measurements of hard palate, more particularly measurements of the three basic dimensions of same, to wit: its width, its height and its depth (length). The device, made of steamless steel for making it possible to sterilize same in a continuous manner, is designed in such a way that all three dimensions may be measured simultaneously, in the course of one insertion of the device into the mouth. Reading of the dimensions measured is possible either with the device still inserted into the mouth, since all three scales are located extraorally; or the dimensions may be fixed on said scales by means of fixing screws and the operator may proceed with the reading only after removal of the device from the mouth. The data, obtained in this reliable and objective way, will enable the operator to determine the palate index of the patient and to classify the palate itself either as a broad (low) one (i.e. the index of which is greater than 2); or as a middle high one (i.e. with an index equalling to 2); or as a high one (with an index ranging between 1,5 to 2); or, finally, as a gothic one (whose index is smaller than 1,5). The palatometer may be used for measuring the dimensions of palates both of grown up persons and of children. It will find its application in surgery, otholaryngology, pediatrics, genetics, anthropology and stomatology.

DESCRIPTION OF NUMERICAL REFERENCES

1. supporting frame,
2. pin of the collets,
3. screw of the connecting lever,
4. connecting lever,
5. scale for indicating the width of the palate,
6. fixing screw for the gauge measuring the height of the palate,
7. fixing screw for the gauge measuring the width of the palate,
8. scale for indicating the length of the palate,
9. supporting point,
10. grips,
11. clamping screw,

12. auxiliary arm of the clamping part,
13. joint of the auxiliary arm,
14. supporting tip for measuring the width of the palate,
15. supporting tip for measuring the length of the palate,
16. supporting tip for measuring the height of the palate,
17. holder of the gauge for measuring the height of the palate,
18. arm of the collet,
19. pin of the gauge for measuring the height of the palate,
20. scales for indicating the dimensions of the height of the palate,
21. spring,
22. spring tightener,
23. coupling,
24. safety spring.

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A NEW APPARATUS FOR MEASURING THE FACE AND ITS ASYMMETRIES

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INTRODUCTION

While in anthropology cephalometry can look back upon a long and old tradition, its use in medicine until recently was practically nill. Only in the course of the past decade it came to be used, although exceptionally, e.g. in child neurology for diagnosing craniostenosis (V. Fetter et al., 1957; V. Fetter, 1958) in orthodontics and stomatosurgery during the registration of changes in the shape of the skull as seen in X-ray photos of patients suffering from cheilo-, gnatho- and palatoschisis (A. M. Schwarz, 1961), and in some other branches.

Recently, deliberate efforts, made towards objectivisation of some morphologic changes in the faces of patients suffer-

ing from the most varied types of facial cleft lips, asymmetries, hypoplasias, as well as from other deformations resulting from injuries to the face or its individual parts, could also be witnessed among plastic surgeons (cf. A. Mendez de Souza, 1964; C. Baud, 1966; M. González-Ulloa, 1965; and others). Owing to the fact that until recently plastic surgeons were satisfied with measurement data obtained with the aid of a tape measure, and sometimes even through mere estimates, they altogether lack the necessary experience with handling a cephalometer and a slide gauge. But unlike the above mentioned branches of medicine, plastic surgery also needs information on the soft cover of the splanchnocranium, on the irregularities, if any, of the customary relief of the face and its parts, on the asymmetry of the soft and possibly also the hard (skeleton) tissues, and on other matters.

Since we are of the opinion that the changes in the measures of the face, particularly in children, and its individual parts should be carefully studied both before and after surgery in the same manner as the unmeasurable descriptive characters, Farkaš and Hajniš tried to design and develop an apparatus able to satisfy these demands to which the name of "faciometer" was given (Farkaš, Hajniš, 1967; Czechoslovak Patent Specification No. 123,637). When using this faciometer, no special skill of an experienced anthropologist is needed. Therefore, this apparatus is well suited for surgeons.

PROBLEM

Measures, expressed in absolute values, i.e. in millimetres and degrees, render an accurate image of the face and its parts. The possibility of comparing these values, obtained by measuring the face with a faciometer, more particularly those values obtained after a relatively longer time following surgery, with the values obtainable from normal populations, will show whether the surgical intervention was successful or, in other words, will inform us on whether the surgeon was successful in trying to return the face into the limits of normal values.

In families suffering from congenital facial defects it would be suitable to measure the facial morphology of all its members. Thus, it would be possible to discover some deviations of the face from the normal values and even to determine their hereditary character. Such deformations of the facial shape and of its individual parts, however, must be very carefully registered in order to be distinguishable from post-operative deformations.

In addition, we think that microforms of some congenital defects might be discovered through careful measurement of the face and its individual parts. This proposition which today has been generally accepted also as regards other parts of the human body (e.g. R. B. Ross and W. K. Lindsay, 1965; Ch. M. Woolf et al., 1965; L. H. Meskin et al., 1965; K. Hajniš and L. G. Farkaš, 1964 and 1965; K. Hajniš, L. G. Farkaš, M. Hajnišová, 1965 and 1966; F. Burian, O. Klásková, L. G. Farkaš, J. Červenka, 1964; Ch. G. Longenecker et al., 1965; and others) is of great importance in following the hereditary character of a certain congenital defect in the members of the family of the patient suffering from some hereditary form of congenital anomaly of the face and its parts or even of other parts of the body.

DESCRIPTION

The faciometer consists of two main parts: 1. a band placed on the neurocranium and 2. a mobile part representing the actual measuring device. The measuring part of the apparatus consists of a vertical arm which, when measurements are taken, is disposed in such a manner that its median line lies on the median level of the face and is perpendicular to the Frankfurt horizontal line. The upper part of the vertical arm features a mobile wing with a scale for measuring the deviations of the nose. Further downwards, the perpendicular arm is provided with a mobile horizontal arm provided on both sides with sliders. The horizontal arm, like the vertical one, is fitted with a millimetre scale having the zero value in the middle. The sliders can determine both the

width of the face and the mutual position of any two points in the face with regard to symmetry.

Both sliders are provided with needle-like pins moving in the sagittal plane. They are fitted with a millimetre scale. This device enables to establish any irregularities on the surface of the face, and mainly, the difference between the fronto-dorsal height of the relief (localisation of points) on one side and the other.

As can be seen, the just described measuring part of the faciometer has more functions than one. It combines the possibilities of some conventional anthropologic instruments. Our faciometer is protected by patents in Czechoslovakia (Patent Specification No. 123,637), in Switzerland (Patent Specification No. 430,944), and in France (Patent Specification No. 1,461,955). Patent applications are pending in the United States, Great Britain, Italy, and the Federal Republic of Germany.

HOW TO USE THE FACIOMETER

We suggest that a faciometer of smaller size serve for measuring children's faces, while a larger apparatus be designed for adults. For the smallest children it is necessary to assume that measurements can be taken only in pre-medication or closely before surgery (in narcosis). The measuring of adult persons may be suitably performed while sitting with the head well fixed, or while lying.

After fixing the apparatus on the head, the latter is adjusted with the aid of a level (mounted in the frontal portion) to such a position that the vertical measuring arm comes to lie in the median facial plane and is perpendicular to the Frankfurt horizontal line.

Measuring of the deviation of the dorsum of the nose: The centre of the movable upper rotatable wing joint is placed above the nasion point (n). A deflection of the wing in the direction of the deviation shows on the goniometer the degree of the nose's deviation.

Upon moving the sliders along the horizontal arm of the apparatus towards the alare points (al-al) we can measure the width of the alae of the nose.

The location of the subalare points (K. Hajniš, L. G. Farkaš, M. Hajnišová, 1966) both in the vertical and in the sagittal direction is carried out with the aid of the said needle-like pins. The apparatus is able to determine both the mutual position of these two points and their possible dislocation, if any, when compared with normal location.

The width of the fissure of the eyes (the ectocanthion — [ect] and endocanthion [end]) on both sides is determined by shifting the sliders along the horizontal arm in the direction above these two points. The sagittally movable needle-like pins permit accurate fixing of the said sliders in the endocanthion and ectocanthion points. In addition, the distance between the two inner canthi of the eye may also be determined with the aid of the faciometer (endocanthion — endocanthion [end-end]). Similarly, we may determine, after palpation, the mutual position of the two upper edges of the orbit and of the lower points lying on the two orbitae (or).

When measuring the fissure of the mouth, the horizontal arm of the faciometer is adjusted to its height and the sliders are shifted into a position above the fissure of the mouth and the asymmetry of its two parts, if any, may be discovered.

In fixing the horizontal arm of the faciometer at the level of the zygion points and in shifting the sliders in this direction so as to come above them, we can determine the bizygomatic width of the face (zy-zy) as well as the mutual position of these two points in the vertical plane. At the same time, any asymmetry of these two points in respect of the median facial plane (n-gn) is discovered.

In the same manner, the bigonial width of the face (go-go) may be established, as well as the distance of the gonion points from the median plane.

When impressing one half of the face, the horizontal arm must be adjusted above the deformed place and the sliders, together with the needle-like pins, determine then the relief depth of the face. In the same manner, an excessive convexity of the facial relief can be measured.

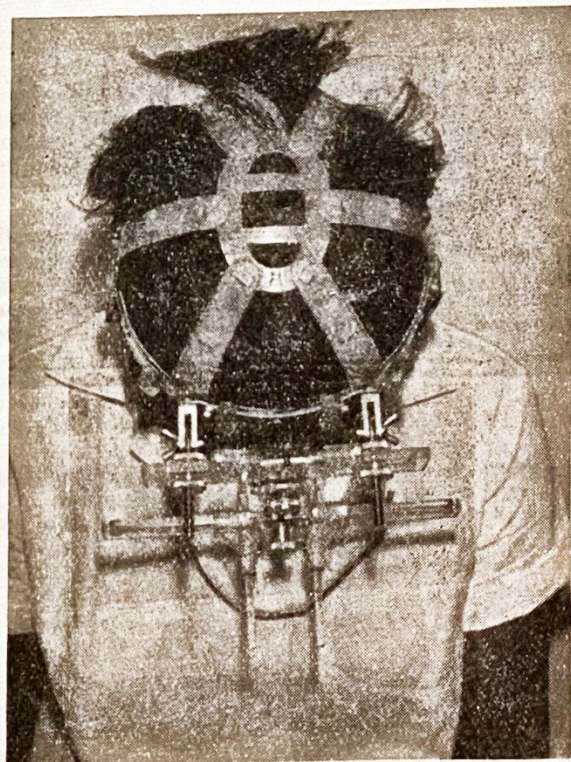
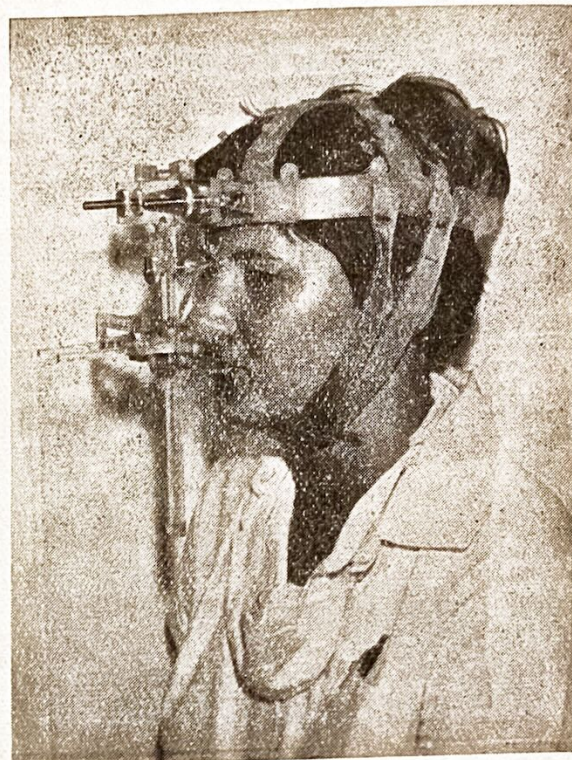
The height dimensions of the face between the nasion-subnasale (n-sn) or nasion-stomion (n-sto), or nasion-gnathion

points (n-gn), etc. can be determined by setting the horizontal arm of the apparatus above the said points and by deducting their respective distances on the scale of the vertical arm. Similarly, the height of the orbit and the height of the vermillion (the transition zone of the lip) on both sides and in the median plane can be measured, etc.

FINAL REMARKS

The described apparatus permits accurate measurement of the dimensions of the face and its parts in an objective manner. The instruments features the following advantages:

1. Only minimum experience in the determination of the



1. Fixing of the band on the head.

2. Level for fixing the apparatus in the right position.

3. Mobile vertical arm of the instrument with a millimeter scale for measuring the height dimensions of the face.

4. Mobile wing for measurement of the position of the nose with a scale.

5. Mobile horizontal arm of the instrument with millimeter scale for measuring some width dimensions in the face.

6. Scale with degrees showing the deviation of the horizontal arm in cranio-caudal direction.

7. Movable riders on the horizontal arm.

8. Needle-like pins with a millimeter scale movables in frontodorsal direction.

Frankfurt horizontal line and location of the cephalometric points is necessary for handling the faciometer and for obtaining the relevant data in respect of the metric facial marks with the aid of this apparatus. Thus, it is especially suited for surgeons and possibly for other practitioners of medicine as well.

2. The degree of damage to the face before corrective surgery can be established, as well as the extent of the relief after the operation. The faciometer enables reiterated checks of the post-operative state under standard conditions for a very long time; this is of great importance for the evaluation of long-term results of surgical treatment, mainly in respect of youth on reaching puberty after the termination of the development of the face.

3. The faciometer permits to study some hereditary facial changes (such as the depth of the nasion and the subnasale points, the protrusion of the lips and the chin along the median line, irregularities and asymmetries, etc.) as well as of their parts in whole families only with the aid of uniform measurements and the evaluation of the deviations found.

4. It offers an opportunity of checking and discovering some microforms of congenital defects of the face in the family-members of the patient suffering from some developed form of congenital anomaly. The standards of facial growth established in the course of measurements of the Czech population from birth until maturity may, among others, serve well to determine the microform in the face.

5. The values and dimensions obtained are indicated accurately, in millimetres or degrees, as is common with other conventional anthropological tools.

6. The apparatus combines the faculties of several measuring instruments currently in use in anthropology.

7. It may serve for purposes of registration of facial deformations occurring not only as a result of congenital anomalies, but also after injuries.

SUMMARY

The authors describe the faciometer — a new apparatus for measuring the size, shape, asymmetry and irregularities of the face and its parts — developed in the Plastic Surgery Laboratory, Czechoslovak Academy of Sciences, Prague (Farkaš, Hajniš, 1967; Czechoslovak Patent Specification No. 123,637).

Apart from describing the method and techniques of its application, the authors point out the advantages of the faciometer which combines some faculties of several measuring instruments used in anthropology. The instrument serves for the objective determination of changes in the event of congenital anomalies of the face or after traumatic deformations in this region. It is a suitable device for all plastic surgeons who, in general, are specifically skilled in handling the commonly used anthropometric devices.

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SUBJECT AND MEANING OF THE ANTHROPOLOGY OF MOTHERHOOD

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Anthropology has been traditionally paying much more attention to problems of men than to those of women. Physical anthropology has determined the differences between both sexes, and a whole scale of characteristics has been worked out beginning with those typically female up to those typically male. Attempts have been made at a constitutional division, where for women in most cases analogous images to the male constitution were being looked for. Exceptionally on the whole was the attempt at providing a typology for women according to fat distribution.

On the other hand, it was obstetricians that looked for a connection between somatotype and gestation. Their attention focused in the first place on the study of pelvic proportions, whose normality presents the fundamental condition of spontaneous birth. Among the Czech obstetricians, Rubeška established the relationship of the body weight to the pelvic proportions of a woman.

A series of clinical types were established (such as pyknic, asthenoptotic, intersexual, hypoplastic types) and attempts were being made to express the ability of these types to fertility.

While anthropological work was methodically perfect, but missed the clinical aspect, clinical work, on the contrary, was characterized by a rather liberally understood interpretation of the constitution types, so that the conclusions were sometimes bolder than reliable.

Because of the demographic and medicinal needs a series of basic studies was carried out, where a correlation was found between certain somatic indicators of mother and newborn.

Our conception of what we suggest to call the anthropology of motherhood follows deliberately the previous one.

The anthropology of motherhood is understood by us as the fundamental methodic approach in the anthropological study of woman. The subject of this branch is anthropological observance of woman in relationship to her basic biological function, i.e. gestation. The anthropology of motherhood studies the somatic conditions for gestation, the somatic adaptation of the woman's organism during gravidity, and the somatic changes occurring under the influence of gravidity. It further established the relationships between the somatic characters of the mother and those of the newborn. Thus,